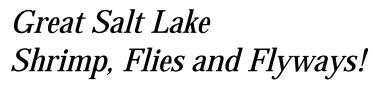
Growing WILD

Utah's Project WILD Newsletter

Spring 1993



Nature, in her blind search for life, has filled every possible cranny of the earth with some sort of fantastic creature.

-Joseph Wood Krutch

Very few organisms can survive the highly saline waters of the Great Salt Lake. Blue-green algae, brine fly larvae and brine shrimp are among the few species adapted to actually live in the lake. Yet the Great Salt Lake is a vital part of a large ecosystem which supports a great diversity of plants and wildlife.

Cattails and bulrushes, small crustaceans and insects, millions of migrating shorebirds and waterfowl, fish, snakes, muskrats, great blue herons, owls, minks, and weasels are only a few of the species which depend on the Great Salt Lake and its surrounding wetlands for survival.

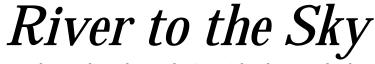
Utah author Terry Tempest Williams describes Great Salt Lake city." She asks if we are "large enough as a people to extend our notion pickleweed, brine shrimp and great blue herons."

Great Salt Lake Brine Shrimp

This spring Utah's Project WILD focuses on the Great Salt Lake -- in (terminal) lake with no outlet to the sea, as part of a larger system which hemispheres, and then as part of a larger ecosystem encompassing 400,000 acres of wing the Great Salt Lake as a major site for migrating shorebirds and waterfowl look at migration as a topic for study, with particular focus on Utah's neotropical migrants.

as a "wilderness adjacent to a of community to include

its role as a unique inland connects continents and acres of wetlands. Recognizalso leads us to take a closer migrants



With no outlet to the sea, the Great Salt Lake is an inland sea that evaporates water to the sky, leaving behind concentrated minerals and salts. Trapped in the Great Basin, the Great Salt Lake is 70 miles long, 30 miles wide and 4,200 feet above sea level. Salt content is 20% in the northern waters and 10% in the southern waters. By comparison, the salt content in the ocean averages 3.5%. The Great Salt Lake and surrounding habitats provide food and shelter for over 250 species of birds, 64 mammals, 8 different snakes, 8 amphibians and 9 lizards!

After exploring and reporting about the Great Salt
Lake for over a year, the Salt Lake Tribune has compiled their
research and findings into a tabloid format entitled "The
Great Salt Lake, Utah's Amazing Inland Sea." Organized and
written primarily by reporter Tom Wharton, this 32-page
publication is available free from the Project WILD office
(801-538-4719) and is an excellent resource for your classroom.

Topics featured include:

- timeline tracing 70,000 years of Great Salt Lake history
- geology
- wetlands
- tributaries
- shorebirds, pelicans, bald eagles
- species diversity
- hunting, industry, recreation, watchable wildlife
- · access points
- "Salty Paradox: It's Been Here Forever; It's Never What It Seems," an essay by Terry Tempest Williams
- Great Salt Lake poster

Brine Shrimp -- food for millions of migrating birds

- Adult brine shrimp are about 1/4 inch long.
- 105 brine shrimp eggs can fit on the head of a pin.
- Brine shrimp reproduce every two or three days, laying about 150 eggs.
- Brine shrimp females do not have to mate with males to produce eggs, but Great Salt Lake brine shrimp are unique because males and females do mate some of the time.
- In spring and summer, millions of eggs form coral-colored streaks on the lake's surface. Eggs are harvested and shipped to Asia where they're fed to prawns, crabs and lobsters.
- Brine shrimp eggs can remain dormant for years but still hatch when they come in contact with saltwater.
- Most Great Salt Lake brine shrimp die off in the winter when temperatures drop.
- Brine shrimp eat algae.

--from "The Great Salt Lake, Utah's Amazing Inland Sea"

Field Trips

- For field trips to Great Salt Lake State Park or to arrange a classroom visit by a park ranger, contact Ranger Dan Davis at 533-4080. Dan is very willing to discuss educational opportunities that are available for classrooms or on-site visits.
- For field trips to Bear River Migratory Bird Refuge, contact Mark Lanier with the U.S. Fish and Wildlife Service at 723-5887. Mark is in charge of public use and education at this northern Utah bird refuge.

New WILD Brine Shrimp T-Shirt!

Now you can wear a brine shrimp as a symbol of all wild things! Our new shirts display the brine shrimp found on the first page of this newsletter with the words "WILD THING" above it. "Project WILD -- Utah" is written in small type across the short sleeve.

Limited supplies are available in fushia and wild orchid (sizes large and extra large, 100% cotton). Price of \$10.00 includes mailing. Call the Project WILD office (801-538-4719) to order!

Video -- "Bear River Migratory Bird Refuge: Reestablishing an Ecological Essential"

Beginning with a historical perspective, this 18 minute video produced by the U.S. Fish and Wildlife Service chronicles the development, natural loss to flooding and subsequent reestablishment of the Bear River Refuge. Along with management information, this production teaches importance of wetlands and specific importance of the Bear River system to migratory birds, endangered wildlife and other species, including mammals, fish, amphibians, reptiles and plants. Check this video out from the Project WILD office in Salt Lake City (538-4719) or in Ogden (Bruce Andersen -- 479-5143).



And More...

- "The Great Salt Lake Story," sponsored by the Utah Natural History Museum in cooperation with the Salt Lake Tribune and Davis School District, offers teachers opportunities to study, learn and write curriculum. If you're interested in being involved in this year-long project, contact Sandy Zicus at the Museum, 801-581-6927.
- Reference file with articles on migration is available from the Project WILD office. Call to check out. Excellent for background information when doing MIGRATION HEADACHE.
- Discover Utah Wildlife poster and accompanying Wildlife Notebook Series featuring Wilson's phalaropes are still available. Both focus on the importance of the Great Salt Lake ecosystem. Call the Project WILD office for copies.

Activity Page -- map skills

Reservoirs of Geese

People usually think of reservoirs as collecting places for water. This is true, but they are also important collecting places for geese and other birds during spring and fall migrations. Migrating birds often need to stop at reservoirs, lakes, marshes and other such places to rest and eat.

Once energy stores
are renewed, the geese move on.
Anywhere from 50,000 to 75,000 Canada
geese travel through Utah every year -heading north in the spring and south in the fall.
Many other such flyways cross the United States,
providing safe travel for over 1,000,000 Canada geese each year!

The next page shows a Canada goose that has flown into Utah from her wintering grounds in southwest Arizona. Some geese migrating into Utah will nest here. The goose shown on the map wishes to travel northward through Utah, into Idaho, north to Montana and finally into Canada to nest.

Using a state map to guide you, draw in the places listed below:

- Mona Reservoir
- Sevier Bridge Reservoir
- Gunnison Reservoir
- Scipio Reservoir
- Clear Lake Waterfowl Management Area
- Great Salt Lake marsh areas

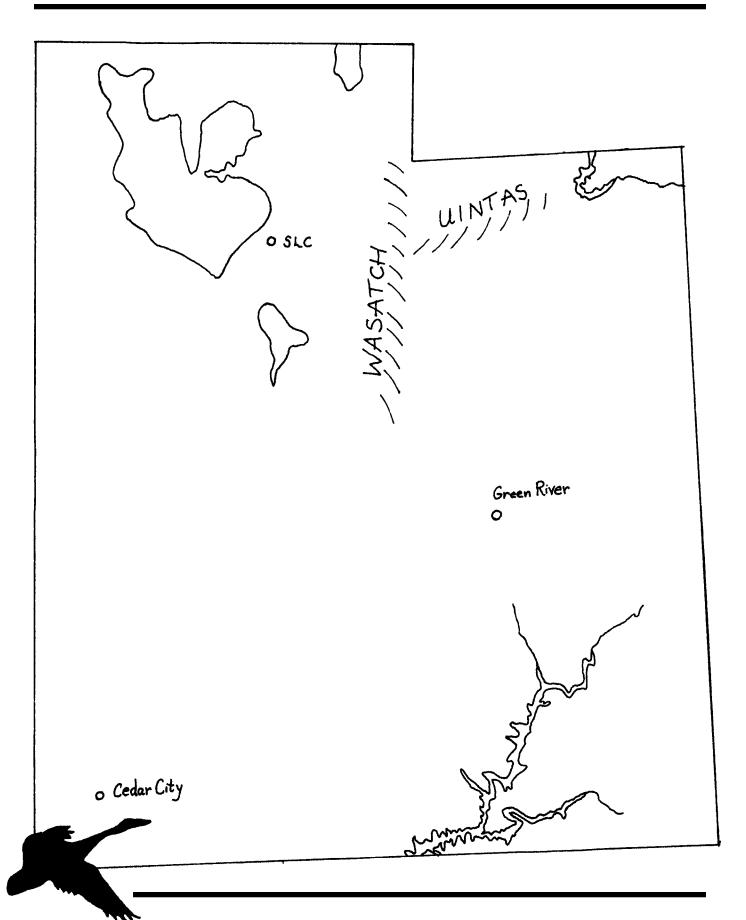
- Fish Springs Wildlife Refuge
- Piute Reservoir
- Otter Creek Reservoir
- Minersville Reservoir
- Fish Lake

If the "jumps" between these resting places were too far for this goose, where else might she stop? Can you find some additional resting and feeding stops on the state map?

Now, draw a line connecting these wetlands that make up the flyway for this goose. Then draw the goose flying northward out of Utah.

Where are the lakes and reservoirs that will help her continue her journey through Idaho and Montana? Find maps of those states and identify additional

resting and feeding areas.



"Migration Mysteries: Disappearing Neotropicals"

The following excerpt is from a publication developed by Iowa State University for educators teaching about neotropical migrants. The 4-page tabloid contains both content information and activities for middle and upper grades. Please call the Project WILD office for a free copy of this instructional newsletter for your classroom use.

Migration is the movement of animals from one place to another. The largest group of birds that we see during migrations is called neotropical migrants. They were given this name because these species of birds migrate in the fall all the way to Mexico, the Caribbean islands, and other Central American and South American countries in the tropics. This means these birds fly thousands of miles every fall and spring. About 300 of the 650 bird species that nest in North America are neotropical migrants. They include warblers,

vireos, orioles, hummingbirds, swallows, swifts, shorebirds, and some birds of prey. The neotropical migrants make up 50-70 percent of the bird species of deciduous forests and prairies in the central and eastern United States.

Birds migrating through the
United States follow some general bird
highways known as flyways. The four main
flyways are the Pacific, Central, Mississippi and
Atlantic. These flyways run north and
south and are really not single lines but
rather broad areas of travel. Many birds
cross open ocean during their migration
between North and South America. This means
that birds need a lot of energy to migrate. This energy
is stored in the form of body fat. Small birds cannot store a

lot of fat to use as energy during long flights. During migra-

tion, some birds lose as much as one-fourth to one-half of their entire body weight, so it is very important that they store up enough fat for energy. Just think how much weight you would lose if you lost half of your body weight! How smaller birds ever store enough to make these flights is still a wonder to scientists. It was once believed that little birds, like hummingbirds, migrated by riding on the backs of larger birds. However, this myth is not true. These little birds make it entirely on their own!

goldfinch

"Migration Mysteries: Disappearing Neotropicals" continues on with information about how, when and why birds migrate, describing the many complexities of this behavior. The perils of migration are also described, and there is a lengthy discussion on the effects of habitat loss and fragmentation. A matching activity, crossword puzzle and action ideas are included for classroom use.

WHY SHOULD WE CARE?

- Many neotropicals -- like warblers, vireos, flycatchers and swallows -- are some of our best insect controllers, eating tons of insects annually.
- Neotropical migrants may be indicators of the health of our environment. If their populations continue to decline, our quality of life declines with them.
- Neotropical migrants -- like all wildlife -- have intrinsic values important and unique to everyone of us.
- Can you think of other reasons?



International Migratory Bird Day May 8, 1993

Saturday, May 8, 1993 will be the first annual International Migratory Bird Day. On the second Saturday in May each year, individuals and organizations throughout the Western Hemisphere will participate in activities dedicated toward the conservation of all migratory birds -- songbirds, shorebirds, raptors and waterfowl.

If you would like to become involved in International Migratory Bird Day or design classroom activities around the event, you can order a 172-page workbook of ideas, activities, lessons and content information for \$5.00 from Smithsonian Migratory Bird Center, National Zoo, Washington D.C. 20008.

Fly Into Action!!

Fifty-four percent of the neotropical migratory birds found in Utah have shown population declines between 1980 and 1989 according to the Neotropical Migratory Bird Conservation Program. Frank Howe, Avian Program Coordinator for the Utah Division of Wildlife Resources, indicates that Utah has about 170 species of neotropical migratory birds, mostly songbirds, that nest in the state during the warmer months then migrate south for the winter. Frank is currently helping to coordinate Utah's Partners in Flight Program as part of a national effort to address the issues involved in this population decline.

Action Project Ideas!! Frank suggests that interested teachers and students contact him (801-538-4761) to participate in banding programs and nest searches in designated areas. Frank will also have information about events scheduled in Utah to celebrate International Migratory Bird Day.

Poster for your classroom from Partners in Flight

•Brightly colored poster from the Partners in Flight Program, National Fish and Wildlife Foundation, features several neo-tropical migrant species. Call the Salt Lake Project WILD office (538-4719) to request one for your classroom.

• You may also call the Salt Lake office to receive a newsletter from the Partners in Flight Program. We have a limited number of their newsletters which we can send to you, and you can ask to receive future newsletters by signing up through our office. Newsletters are about 20 pages long and contain detailed content information on neotropical migrants, calendars of events, action ideas and available resources. Activity Page -- guided imagery



Night Flight

You have been flying in darkness for nearly six hours. Soon the sky will begin to glow in the east, tinging the horizon orange and pink. You weigh much less than you did at sunset, when you had eaten so much that you weighed 1 1/2 times as much as you do now. Luminous clouds sail the sky. A crescent moon flashes back at you from the still surface of a pond a mile below. An occasional call tells you the location of your companions scattered in the darkness.

You are a yellow warbler, named for the bright yellow plumage that colors you from beak to tail. Your black eyes miss nothing. The night is alive with many like yourself, flapping along at 35 miles per hour, moving north as you have every night since you left your Central American home for this yearly trip. You are headed for Utah, where you will gorge yourself on mayflies, caterpillars and beetle larvae.

You have no road map to guide you -- roads are of no help to you; yet you know from the rotation of the stars, the pull of the earth's magnetic field and the prevailing winds that you are going in the right direction, riding the warm wave that will bring spring to this reawakening land.

It hasn't been an easy journey. Remember last night in the fog when you barely missed hitting the TV station antenna?! And remember last week when you almost flew into the glass window of that skyscraper when you were landing in that park near the city?! Some of your companions weren't so lucky.

Each year more houses and larger cities twinkle up at you from the earth, reflecting a fragmentation of the land. The vast stretches of forest and prairie that your ancestors knew have been sliced into many small parcels. There are more edges -- fewer secluded interiors. It has gotten harder and harder to hide your nest from predators.

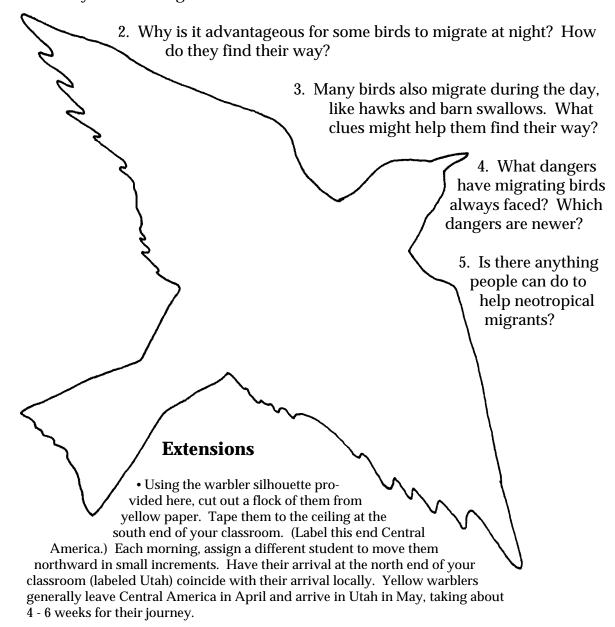
Before the new day dawns, you find yourself scanning the landscape for the dark patches that signify park, refuge, sanctuary. You will find safe trees and cover there where you will rest and feed during the daytime hours. And you will wait till darkness -- when you again continue your journey.

(continued on next page)

Background information for this activity is found in the publication "Migration Mysteries: Disappearing Neotropicals" described on page 6.

Questions for "Night Flight"

1. Why do birds migrate?



• On black construction paper, using chalk, have students draw how the earth might appear from above to a bird migrating at night. Hang the art work and discuss what sorts of places the "black" spaces might represent (i.e. parks, forest, lakes). Have students find local examples.

Activity Page -- simulation

Chain Reaction

• Trace the flow of energy through a food chain by using this adaptation of the cooperative game called "Knots."

Objectives

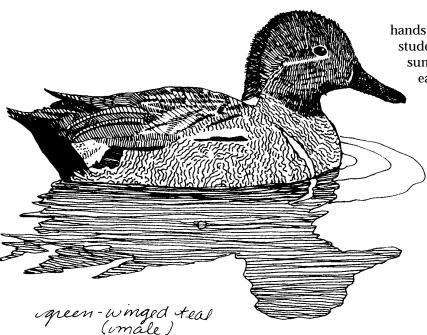
Students will be able to: 1) identify consumers and producers in a food chain: and 2) trace the flow of energy through a food chain.

Procedure

1. Begin by drawing and discussing a simple food chain. Point out that all food chains begin with a producer, in most cases a plant. Then discuss how the sun's energy is transferred to the animal that eats the plant. The first consumer in a food chain is called the primary consumer. In most food chains there is another link called secondary consumers. The secondary consumers are usually carnivores.

Discuss how secondary consumers are using the sun's energy even though they are eating other animals. You can even extend the food chain to another link by introducing tertiary consumers or predators that eat other predators.

2. Divide your students into small groups of five to eight students. The activity can be adapted for younger students by using fewer people. Have your students stand in a circle. Ask your students to raise their right hands. Tell them that their right hand is going to be a consumer in a food chain. Ask the students to raise their left hand. Tell them that their left hand is going to be a producer.



Now have your students join hands forming a circle. Ask your students to notice how each consumer has found something to eat. Tell the students that you

are the sun and you are going to touch a producer. When you touch that producer you will say energy. The student will pass this energy around the circle (through the food chain) by gently squeezing the left hand of their neighbor. With the squeeze, the student passing the energy will say, "Energy."

(continued on next page)

3. **Now for the fun part.** Ask the students to release their neighbor's hand. Tell your students that, in nature, energy flow through a food chain can be more difficult to follow.

Ask your students to reach into the center of the circle with both hands and take hold of the hands of other students.

In order for the activity to work, there are only two rules:

- a) Students can not hold the hands of the person standing next to them.
- b) Each student must hold the hands of two different students.

The students should now be held together in one big knot.

- 4. Tell your students that they are going simulate a food chain. The teacher is the sun once again and taps one hand of any student. The teacher asks that student to squeeze their opposite hand, thereby passing the energy on to the next student and on through the food chain. As above, the energy should be passed through the chain with a gentle squeeze and the word "energy". Ask your students to continue holding hands.
- 5. Once the energy goes through the food chain, tell your students that they are now going to be scientists and try to untangle this food chain. Ask your students to try to return to a circle without releasing their hands. It is okay to release your hands if you feel like you might be injured. Or students can release their grip and rejoin their hands in a more comfortable grip. Tell your students that they might not be facing in towards the circle when they unravel the knot, and that is okay. If the students end in a figure eight arrangement, this is also a solution.
 - 6. Once untangled, ask the students to pass the energy around the circle a final time.

Extensions

- After doing this activity, ask your students to research the biological community of the black bear.
- Ask students to draw some of the possible food chains that exist in different biological communities.
- Ask students to integrate the different food chains into a food web. Draw the web on a very large piece of paper and post it on the wall.
- Ask students to make a food web mobile that demonstrates where humans fit into the web.

Reference

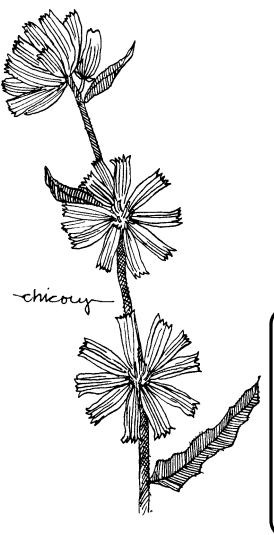
- "Knots," The New Games Book, New Games Foundation, Headlands Press, 1976.
- "No Species is an Island," Owner of the Earth: Grizzly Bear, National Wildlife Federation, 1990.
- "Black Bear," Wildlife Notebook Series #1, Utah Division of Wildlife Resources.
- "A Guide to the Ecosystem Concept," Project WILD Activity Guides.

("Chain Reaction" activity was developed by Bob Ellis and Brenda Schussman.)

Resources

For Natural Resource Teachers and Outdoor Educators

- The Leopold Education Project has produced a curriculum based on Aldo Leopold's book, A Sand County Almanac. "The Teacher's Guide with Student Activities" can be purchased for \$10.00 from Boone County Soil and Water Conservation District, P.O. Box 218, Belvidere, IL 61008 (815-544-2655). Or you can check out the curriculum guide from the Project WILD office.
- We also have the video, "Aldo Leopold; A Prophet for All Seasons." If you are teaching about wildlife management, this tape offers some strong insight into some of the issues of conservation ethics.
- The Utah Division of Wildlife Resources is developing a new federally funded Aquatic and Fisheries Education Program. The coordinator, Phil Douglas, is interested in creating a program that meets educators' needs. If you are interested in getting involved in the program, call Phil at 801-538-4717.



Special Thanks

Special thanks to Merrill Miller of the Utah Wildlife Federation for his dedication to help teachers teach about the environment. Because of Merrill's efforts, thousands of packets for National Wildlife Week are delivered each year to district offices for distribution to Utah teachers. Utah's Project WILD appreciates Merrill's hard work in getting these educational materials into the hands of teachers.

Merrill has contributed several of these packets to the Project WILD office, and, if you find you still need a teaching packet for this year's topic on Rain Forests, please call the Project WILD office (801-538-4719).

Bear Poster!!

The new Discover Utah Wildlife poster is a bold photograph of a black bear. Call the Project WILD office (801-538-4719) for a copy or pick one up at a Wildlife Resources regional office.

Also available is the updated, revised Wildlife Notebook Series on the black bear. Illustrated with Clark Bronson's drawings, this publication contains information on habitat, food habits, denning behavior, reproduction and management of the black bear.

Action

Projects at Fish Springs

There are several action projects at Fish Springs National Wildlife Refuge in which students could become involved. Jay Banta, Refuge Manager, describes three current projects needing attention:

- Banding ducks -- takes place from late June till the first of September.
- Control of salt cedar -- Pulling salt cedar plants allows for native species to reestablish. Salt cedar is an introduced plant which competes with native species, is very water consumptive and is of little use to wildlife.
 - · Facility maintenance

Groups who volunteer their time at the Refuge may camp overnight or stay in the bunkhouse. For more information, contact Jay at 831-5353.

ZERO TRASH

Let us know what your school is doing to make it a "ZERO TRASH" school! One school, reported by the National Wildlife Federation in Ranger Rick's March 1993 issue, used to throw away 35 pounds of trash every day. Now after initiating their ZERO TRASH program, they throw away only 15 pounds of trash each day. How? They started an action project to:

Precycle -- They buy things that can be recycled. Reuse -- They reuse things many times before recycling. Students bring their lunch to school in reusable cloth lunch sacks.

Recycle -- They put recycling bins in the halls so recycling is easy, and they recycle just about everything (glass, steel, aluminum -- even foil), plastics, paper -- even paper towels, and cardboard.

Compost -- Food scraps are added to a compost pile. Then the compost is used to fertilize the school garden.

Even parents became involved to help haul the collected trash to recycling centers. Let us know if you develop a ZERO TRASH program!

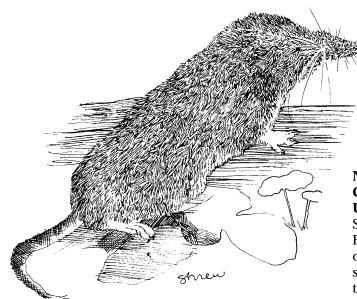
Global Youth Forum

The United Nations Environment Programme sponsors the Global Youth Forum to bring together from all over the world young people who have been involved in environmentrelated projects in their communities. This year, the Global Youth Forum will be held at the University of Colorado in Boulder, Colorado, May 20-21. More than 2000 young people are expected to attend the program, featuring lectures, seminars, displays and cultural events. Topics include global warming, acid rain, ozone depletion, water and ocean pollution, deforestation, energy use, biological diversity, wildlife, recycling, and toxic and other waste management. The long-range goal of the Global Youth Forum is to facilitate the participation of as many young people as possible in the decision-making process of the United Nations.

To get involved as a participant, observer or volunteer, contact the Colorado Alliance for Science, University of Colorado at Boulder, Campus Box 456, Boulder, CO 80309-0456 or call (303) 492-6392.

American Wetlands Month -- May 1993

To celebrate wetlands as among the most productive natural areas in the world, American Wetlands Month encourages groups to study wetlands and to increase their understanding and appreciation of the many valuable functions of wetlands. For more information on American Wetlands Month and a colorful brochure on the values and functions of wetlands, contact the Wetlands Hotline (800-832-7828).





National Wildlife Federation's Conservation Summit, Southern Utah University, Cedar City, August 7-13. Sponsored by the National Wildlife Federation, this conference offers a week of natural history education and training sessions for teachers. For more information, call 800-245-5484.

Teton Science School

Teton Science School offers a wide variety of natural science field programs for young people and adults. For more information about classes, call 307-733-4765.

International Rainforest Workshops

Learn about rainforest ecology in a "hands-on," interdisciplinary workshop in Costa Rica, July 31-August 7 (\$1,598) or in the Amazon rainforest, July 10-17 (\$1,598). Call 800-633-4734.

National Audubon Society

Visit and investigate ecosystems throughout the world with Ecology Camps and Workshops. Contact National Audubon Society at 203-869-2017 for more information.

Four Corners School of Outdoor Education

For field experiences and instruction in natural history areas, contact the Four Corners School at East Route, Monticello, UT 84535 435-587-2156 for a schedule of classes.

Canyonlands Field Institute

Attend the ninth annual Colorado Plateau Teachers Workshop (\$275), June 21-25. Contact CFI for more information about this course or one of the many other natural history courses they offer. Call 435-259-7750 or write CFI, 1320 S. Hwy 191, P.O. Box 68, Moab, UT 84532.

The Yellowstone Institute

For more information about the abundant field courses offered, contact The Yellowstone Institute, P.O. Box 117, Yellowstone National Park, WY 82190. 307- 344-2294.

Environmental Education Workshops in the Intermountain Region

Central Utah Outdoor Education Workshop, Gooseberry Guard Station, July 26-30

Mt. Charleston Outdoor Education Workshop, near Las Vegas, Nevada, June 13-18

The Alpine Conference, Alpine, Wyoming, June 13-18

The Sawtooth Workshop, Stanley Basin, Idaho, June 13-18

Heartland Peaks Outdoor Education Workshop, McCall, Idaho, July 18-23

For more information, contact Vern Fridley, Utah Society for Environmental Education, 230 South 500 East, Suite 280, Salt Lake City, UT 84102. 801-328-1549

Gowing WILD is written and edited by Brenda Schussman and Bob Ellis, Coordinators, Project WILD. Brine shrimp design is by Jill Rensel. Activity pages are by Ellen Petrick-Underwood. Project WILD is sponsored by the Utah Division of Wildlife Resources.

Fall Preview

Bats Incredible! Wildlife Education Workshop September 17-18-19

The advanced wildlife workshops on raptors and bears were such a tremendous success that teachers are asking for more.

Well, here it is! Yes, this fall we are going to offer a weekend workshop on bats that includes a two-night stay at Lytle Ranch near St. George where we are going to mist-net

We plan on arriving late Friday and leaving Sunday morning after breakfast. Project WILD will provide food, educational materials and rustic sleeping accommodations (choice of trailer or camping) all for \$20.00. Graduate and inservice/ recertification credit will be available. We will be taking a van from Salt Lake, so please let us know if you need a ride. Send in your registration form to reserve a place. We are limiting enrollment to fifteen lucky people.



Naturescope, National Wildlife Federation

Naturescaping Grants Available for School Year 1993-1994! Request Applications Now!!

Naturescaping Grants for schoolyard habitat enhancement projects will be offered again this fall. Some Project WILD teachers have asked for applications now so that they can be working on them. If you're interested in receiving an application this spring, just return the form below. Detailed information will be given in the fall issue of *Growing WILD*, and the deadline for applying will be October 31. Ten grants of up to \$300 each will again be offered.

Send Response Form to Project WILD, Utah Division of Wildlife Resources, 1596 West North Temple, Salt Lake City, UT 84116.	
	YES! Sign me up for the Bats Incredible! Workshop!!! I'll need transportation
	YES! Please send me an application for a Naturescaping Grant.
Name	Phone
Address _	